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Office of Mobile Sources

Regulatory Announcement

New Emission Standards for Nonroad Diesel Engines

The U.S. Environmental Protection Agency (EPA) is setting stringent new emission standards for diesel engines used in a wide range of mobile nonroad construction, agricultural, and industrial equipment and some marine applications. This program is a major step toward reducing the harmful health effects of ozone and particulate matter (PM) nationwide.

What Are The Health And Environmental Benefits?

The new standards will reduce emissions from a typical nonroad diesel engine by up to two-thirds from the levels of previous standards. By meeting these standards, manufacturers of new nonroad engines and equipment will achieve large reductions in the emissions that cause ground-level ozone (especially oxides of nitrogen, or NOx) and particulate matter air pollution problems in many parts of the country. EPA estimates that by 2010, NOx emissions will be reduced by about a million tons per year, the equivalent of taking 35 million passenger cars off the road.

Ozone causes a range of health problems related to breathing, including chest pain, coughing, and shortness of breath. Particulate matter becomes deposited deep in the lungs and results in premature death, increased emergency room visits, and increased respiratory symptoms and disease. In addition, ozone, NOx, and particulate matter adversely affect the environment in various ways, including through crop damage, acid rain, and reduction in visibility.

How Much Will The Rule Cost?

The costs of meeting the new emission standards are expected to add well under 1 percent to the purchase price of typical new nonroad diesel equipment, although for some equipment the standards may cause price increases on the order of 2 or 3 percent. The program is expected to cost about $600 per ton of NOx reduced, which compares very favorably with other emission control strategies.

How Does The Final Rule Provide Flexibility To Industry?

The final rule has several elements that add flexibility to how manufacturers comply with the standards, reducing the costs of compliance without harming the overall environmental goals of the rule. For example, the standards are designed to phase in over several years with schedules that recognize some engines are technologically closer to compliance than others (e.g., engines similar to highway truck engines). Engine manufacturers may also use averaging provisions in choosing their most efficient path to compliance. The final rule also includes provisions designed to smooth the transition by equipment manufacturers as they begin to install the new engine designs into existing equipment.

In addition, since the new standards are expected to be adopted by the State of California and are consistent with standards being proposed in Europe, manufacturers should be able to use a single engine or machine design for all of these markets, thus avoiding the added cost of multiple versions.

How Will The Rule Assist States?

Because the new standards cover a large and diverse population of nonroad machines and are expected to achieve very significant, regional-scale emission reductions across the country, implementation of this program will be an important part of the overall control strategies of numerous states and localities grappling with difficult air quality problems.

How Did This Initiative Evolve?

In recent years, EPA was strongly encouraged by states and others to pursue national regulations that would help them address the air quality problems in many parts of the country. Prior to issuing a proposal, EPA engaged in discussion with state environmental regulators, environmental organizations, engine manufacturers, equipment manufacturers, small businesses, and others. One result of this activity was a Statement of Principles signed by EPA, engine manufacturers, and the State of California outlining a framework for potential nonroad diesel emission standards.

What Are The Main Components Of The Final Rule?

The primary feature of this rule is a set of new emission standards for mobile nonroad diesel engines of almost all types. Standards are introduced in two tiers, with different standards and start years for various engine power ratings. By the end

of 2001, EPA will reassess the feasibility of the standards finalized today and will propose and adopt appropriate new standards for PM.

The rule covers nonroad diesel engines and equipment, except for locomotives, marine engines above 50 hp, underground mining equipment, and engines with displacements under 50 cubic centimeters per cylinder that are typically used in model airplanes. The covered equipment includes farm tractors, bulldozers, and forklifts. The standards, which will be implemented in two tiers over ten years (1999-2008), represent a major improvement from the recently first tier of nonroad engine standards and reduces those standards by up to two-thirds.

The final rule is part of a 3-tiered progression to low emission standards. Each tier involves a phase in (by horsepower rating) over several years. Tier 1 standards were adopted in 1994 for engines over 50 hp (such as bulldozers) and are phasing in from 1996 to 2000. This final rule sets Tier 1 standards for engines under 50 hp (such as lawn tractors), phasing in from 1999 to 2000. It also phases in more stringent Tier 2 standards for all engine sizes from 2001 to 2006, and yet more stringent Tier 3 standards for engines rated over 50 hp from 2006 to 2008. The Tier 3 standards that will phase in beginning in 2006 are expected to lead to implementation of control technologies similar to those that will be used by manufacturers of highway heavy-duty engines (i.e., trucks and buses) to comply with the 2004 highway engine standards.

In addition to the standards, the final rule includes related provisions intended to ensure compliance with the new standards for engines in the field and a program of voluntary standards for engines with superior emissions performance.

Do The New Standards Apply To Existing Nonroad Equipment?

No. Only equipment built after the start date for an engine category (1999-2006, depending on the category) is affected by the rule.

For More Information

Additional information can be obtained electronically via the EPA Internet server:
World Wide Web: http://www.epa.gov/OMSWWW

or by writing to
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